Addressing Literacy: Speech-Language Pathologists' Use of Literacy-Related Materials

A Senior Honors Thesis

Presented in Partial Fulfillment of the Requirements for graduation
with research distinction in Speech and Hearing Science in the undergraduate colleges of The Ohio State University

by

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Acknowledgements

Thank you to all the classroom teachers, speech-language pathologists, children, and families who participated in this study.

Thank you to Dr. Laura Justice.

Thank you to Mary Beth Schmitt.

Thank you to Arts and Sciences for providing funding.

Thank you to the project staff including project coordinators, research assistants, and volunteers.

This research project was supported by Grant R324A090012 from the U.S. Department of Education, Institute of Education Sciences, to Laura M. Justice.

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ABSTRACT

Recently, the American Speech-Language-Hearing Association (ASHA) has expanded the role of the school speech-language pathologist (SLP) to include a focus on literacy, in an effort to improve the reading and writing of students at risk of school failure. This study analyzed the percentage of therapy time that school-based SLPs are using literacy materials and the time spent targeting literacy during therapy for kindergarten and first grade students with language impairment. This research project involved 22 SLPs participating in a larger study of speech therapy practices in public schools. For the purposes of this study, each child within the SLP's caseload was ranked according to his/her fall scores on the Letter-Word Identification (LETTER-WORD IDENTIFICATION) subtest from the Woodcock-Johnson III Tests of Achievement. The child with the lowest score from each SLP's caseload was chosen for analysis (n=22). For each child, two therapy sessions were videotaped and coded. Descriptive analysis of the total amount of therapy time spent using literacy materials and the total time spent targeting literacy issues was calculated within Noldus Pro software. The findings suggest that SLPs are using literacy materials for about 26% of total time in therapy and targeting literacy for 7% of therapy time. Further research as to where literacy is being targeted within the schools for children with language disorders is needed in order to more fully understand the role of the SLP in this academic domain.

INTRODUCTION

Literacy has become a top priority for public educators, particularly given that many students struggle with literacy development across the primary school years. It has long been established that adequate literacy skills are necessary for children's' future academic success. Many children arrive to kindergarten with inadequate levels of reading readiness (Bailet, Repper, Piasta, & Murphy, 2009). In fact, estimates suggest that as many as 40% of children begin kindergarten one or more years behind their peers in critical language and reading skills (Fielding, Kerr, & Rosier, 2007). One study showed that only 29% of children could recognize beginning letter sounds upon entering kindergarten (West, Denton, & Germino-Hausken, 2000). These numbers suggest that some kindergarten and first-grade children may be inadequately prepared and may benefit from systematic interventions that help them achieve grade-level reading skills. Early identification and early intervention are critical to assuaging future reading difficulties and ultimately, academic failure.

Children who have histories of persistent language impairment are at substantial risk for later reading difficulties (Catts, Fey, Zhang, & Tomblin, 2001). Children with diagnosed language impairment are four to five times more likely to manifest reading difficulties than children from the general population (Catts, Fey, Zhang, & Tomblin, 1999b). Controversy exists regarding the sole predictors of future reading difficulties for these children. Numerous studies have pointed to different areas of linguistic skill for which absence or delay can lead to future reading difficulties. More specific predictors include difficulties with phonological awareness, rapid automatic naming, vocabulary, grammar, and narration (Catts, Fey, Zhang, & Tomblin, 2001). Another study points to alphabet knowledge and phonological awareness as the two best

predictors of future reading problems due to their close connection to word decoding skills (Adlof, Catts, & Lee, 2010). The same study found that letter identification, sentence imitation, phoneme deletion, grammatical completion, oral vocabulary, nonverbal IQ, grammatical understanding, and rapid naming are the strongest predictors of reading difficulties in second grade (Adlof, Catts, & Lee, 2010). Another study used logistic regression analysis to show that letter identification, sentence imitation, mother's education, phoneme deletion, and rapid automatic naming are among the most accurate predictors of literacy problems. As evidenced by numerous studies, predicting future reading difficulties based on a single, specific deficit is extremely difficult and probably impossible. Instead, numerous predictors including various spoken and non spoken aspects of language must be considered and analyzed to determine a child's risk for reading difficulties.

The reading problems and delays that result from language impairment support the need for early identification and intervention. Experts suggest that the existence of a developmental language disorder should be interpreted as a critical risk factor for future reading difficulties and that these children should be given special attention (Catts, Fey, Tomblin, & Zhang, 2002). Experts argue that reading difficulties are far easier to prevent than remediate later in life underlining the importance of early intervention (Bailet, Repper, Piasta, & Murphy, 2009).

As discussed by Bailet, Repper, Piasta, and Murphy (2009), the process of reading progresses from linking graphemes to phonemes. In order for children to master the process of reading, they must first master their phoneme awareness within spoken words (Bailet, Repper, Piasta, & Murphy, 2009). In a study by Catts, Fey, Zhang, and Tomblin (2001), the authors suggest an intervention model that targets phonological awareness and sound letter correspondence more directly than in a typical classroom, that intensifies classroom reading

activities by reducing the teacher-to-student ratio, and that encourages teachers to provide more scaffolding than is typical for normal children. Studies show that increased lesson quantities lead to greater gains in phonological awareness, vocabulary, print, and letter knowledge skills (Bailet, Repper, Piasta, & Murphy, 2009). Explicit literacy instruction embedded within storybook reading sessions within the classroom environment can offer substantial benefits and, when precisely provided and modified according to children's changing skill levels, can improve children's reading skills (Connor, Piasta, Glasney, Schatschneider, Crowe, Underwood, Fishman, & Morrison 2009; Justice, Kaderavek, Fan, Sofka, & Hunt 2009; Ziolkowski & Goldstein 2008).

There are numerous theories and schemas addressing how best to implement effective literacy intervention. Recent attention focuses on the use of literacy teams in which multiple professionals implement literacy intervention strategies to aid in promoting children's' literacy skills. These 'literacy teams' consist of a collaborative team including general education teachers, parents, reading specialists, literacy coaches, occupational therapists, physical therapists, school psychologists, audiologists, and many other professionals (ASHA, 2010; Catts, Fey, Zhang, & Tomblin, 2001). SLPs, as well, are members of these literacy teams and more recently, ASHA has officially expanded the role of the school SLP to literacy interventionist, obligated to improve the reading and writing of students at risk of school failure (ASHA, 2010). The role of the speech-language pathologist in regards to addressing the reading difficulties of children has expanded calling for SLPs to include a focus on literacy and reading during their therapy sessions (ASHA, 2010). Reading, writing, and related curricula are now included in the SLP's caseload whereas in 2000, they were not (ASHA, 2010). This responsibility as literacy interventionist comes in addition to the SLPs repertoire of serving all educational levels, diverse ranges of disorders, and any concomitant factors that affect the attainment of educational goals

(ASHA, 2010). The close relationship between oral and written language impairments implies that school speech-language pathologists, with their expertise in language, should play active roles in the prevention, diagnosis, and remediation of reading difficulties (Catts & Kamhi, 1999).

School SLPs address prevention, assessment, intervention, program design, data collection, and federal and compliance with federal and state mandates (ASHA, 2010). Although clinicians are a logical choice to aid in literacy interventions, adding literacy interventionist to the already comprehensive scope of practice of the school SLP may present problems. Along with this expanded role and additional responsibilities, SLPs must ensure that they not become overburdened by their workload. As stated by ASHA, ethically, clinicians cannot simply add additional responsibilities to their caseloads (ASHA, 2010). It is critical for SLPs to prioritize their responsibilities so as to use their knowledge and expertise to its maximum efficiency (ASHA, 2010). SLPs must aim to enable students to meet performance standards and gain the tools for success as members of society (ASHA, 2010).

To date, there is little evidence regarding the extent to which SLPs implement literacy-related targets and materials within their therapy sessions with children. Although we might assume that explicit and individualized literacy instruction embedded into therapy with children would be useful, and it is asserted as a role that SLPs should take by ASHA, no studies have examined SLPs' attention to literacy within the context of the therapies they provide. The purpose of this study is to examine the quantity of time literacy-related materials are being used within therapy sessions for children with language disorders and the quantity of time being used to explicitly target literacy-related skills.

METHODS

Participants

The participants for this study were involved in a larger study of SLPs and children recruited for a larger study. As part of the larger study, SLPs were encouraged to choose up to ten children identified as language impaired from their caseload and seek consent from their caregivers to participate in this longitudinal study. For children to be identified for participation in the larger study, the SLPs completed a questionnaire that screened for diagnoses of primary LI. The questionnaire probed for existing diagnoses, English language proficiency, and current level of functioning. Children within each caseload were then rank ordered with preference for participation given to children with a sole diagnosis of LI over children with multiple disorders. Up to five children per SLP caseload were ultimately included in the study. Children selected for participation were then administered a more comprehensive, direct assessment to confirm diagnosis of primary LI. This comprehensive assessment, based on current research, was administered by members of the research team and consisted of a hearing screening, nonverbal cognitive assessment, and standardized language assessment. In order to be included in the study, children had to meet the following criteria:

- be enrolled in kindergarten or 1st grade
- pass a bilateral hearing screening, unaided, at 25 dB for 1000, 2000, and 4000 Hz
- receive a standard score of 70 or better on the Nonverbal Index of the Kaufman Assessment Battery for children (KABC-II; Kaufman & Kaufman, 2004)
- exhibit primary LI based on the EpiSLI system of the Iowa epidemiological study of LI in kindergarten children (Tomblin, Records & Zhang, 1996)

These assessments ensured that the children in this study met criteria for primary LI, both clinic-based and research-based.

As part of the larger study, trained assessors conducted norm-referenced language and literacy assessments on each participating child in the fall and spring of the academic year. Participants for the present study were chosen by rank ordering the children in each of 22 SLPs' caseloads according to their standardized score on the Letter-Word Identification subtest of the Woodcock-Johnson III Tests of Achievement (WJ-III; Woodcock, McGrew, & Mather). The therapy sessions containing the child with the lowest score from each SLP's caseload were chosen for analysis (n=22). This was done based on the assumption that if literacy intervention was going to occur in speech-language therapy, it would theoretically be with the children exhibiting the greatest risk for reading difficulties.

Child participants ranged in age from 62 months (5.2 yrs) to 96 months (8 yrs) with a mean age of 79 months (6.6 years). Standard scores on the LETTER-WORD IDENTIFICATION ranged from 43 (4 standard deviations (*SD*) below the mean) to 95 (within normal limits) with a mean of 72. Three children fell within normal limits (1 *SD*), 11 fell 1-2 *SD* below the mean, 6 fell 2-3 *SD* below the mean, and 2 fell 3-4 *SD* below the mean. Of the 22 participants, only one child had goals addressing literacy within the SLP list of tasks.

Procedure

As mentioned previously, to be included in the study, children were tested for primary LI with a test battery. The Letter-Word Identification subtest (LETTER-WORD IDENTIFICATION) of the Woodcock-Johnson III Tests of Achievement (WJ-III; Woodcock, McGrew, & Mather) was used to demonstrate the literacy abilities of the participants. The WJ-III is widely used in school test batteries. One standard deviation of the mean (score of 100) is typically considered to be within normal limits. The accepted cut score for identifying literacy impairments varies by school but is generally 1.25 to 1.75 standard deviations from 100.

Coding

As part of the larger study, the children were observed in five separate therapy sessions throughout the academic year. SLPs were provided a video camera to record and mail in video recordings of therapy sessions for each child. The present study examined sessions 1 and 3 of 1 child from each of the 22 SLPs, equaling 44 total video recorded therapy sessions. The videos were coded in Noldus Pro software using a coding scheme developed for the larger study, the Language Intervention Observation Scale (LIOS). Time-sampling procedures were used to document the intervention techniques implemented. As part of the larger study, the video recorded sessions were coded using LIOS codes for Talk-Time, Materials, Interaction, Targets, and Techniques. Important to this study are the behavior codes of Materials and Targets. The Materials code differentiates between: Writing Tools, General Office/School Supplies, Worksheets, Mirror, Arts and Crafts Supplies, Picture Cards/Flash Cards, Picture Schedule, Graphic Organizations, **Books/Literacy**, Toys, Manipulatives, Games, Real Objects, Musical Instruments, Technology, Sensory Manipulatives/Sensory Tools, Oral Motor Manipulatives, Food, Costumes, and Assessment Tools. The LIOS Targets code differentiates between Grammar, Vocabulary, Pragmatics (Communicative Functions, Discourse, and Narratives), Cognition, Abstract Language, Metalinguistics, **Literacy**, Articulation/Phonology, Fluency, Voice, Resonance, Management, and Null. Of interest to this particular study were the Books/Literacy Materials code and the Literacy Target code. The LIOS coding scheme defines the Books/Literacy Materials code as "Any text-based material that child or Therapist reads, discusses, or references for information". It encompasses: Child-made books, published books (fiction and non-fiction), sentence strips, photocopied poem or story excerpt, calendars, and alphabet charts or other posters with information. LIOS defines the Literacy Target code as:

> "Literacy targets address phonological awareness or code-related skills. Phonological awareness targets may include rhyming, segmenting sentences into words, words into syllables, syllables into phonemes. Phonological awareness targets may also address blending sounds into words, syllables into words, words into sentences, or manipulating sounds within words. Code-related skills may include print awareness, print conventions, and letter-sound correspondence. Reading may include decoding individual words or improving reading fluency. Writing may include work on individual letter formations, spelling, and/or invented spelling."

After the therapy sessions were coded, the data was extracted from Noldus Pro software and analyzed using SPSS statistical software.

Reliability

All 44 video recorded therapy sessions were coded by research assistants in concordance with the LIOS coding scheme criteria. As part of the larger study, 10% of videos for each session were randomly selected and double coded for reliability. Two coders independently recorded the same video across all behavior groups. Kappa scores were then determined within Noldus Pro Software. The reliability score for session 1 was 0.82 and the score for session 3 was 0.74. An overall reliability coefficient across all videos for sessions 1 and 3 was 0.78.

RESULTS

The video durations for Session 1 ranged from 8.59 minutes to 32.7 minutes with an average duration of 23.08 minutes. The video durations for Session 3 ranged from 14.37 minutes

to 36.77 minutes with an average of duration of 25.13 minutes. Overall, the average duration of therapy time was 24.11 minutes.

Literacy-Related Materials

For Session 1, the mean time spent using literacy-related materials was 5.35 minutes, (20.15% of total therapy time). Of the 22 videos in Session 1, 12 used literacy-related materials for 0 minutes (i.e., literacy materials were not used at all). The other 10 videos' use of literacy-related materials ranged from 0.62 minutes to 32.11 minutes. For Session 3, literacy-related materials were used for an average of 8.24 minutes (31.02% of total therapy time). Of the 22 videos in Session 3, 9 did not use literacy-related materials at all. The other 13 videos use of literacy-related materials ranged from 0.39 minutes to 30.67 minutes. The average use of literacy-related materials from Sessions 1 and 3 was 6.80 minutes (25.59% of total therapy time). Table 1 reflects the results for use of literacy-related materials.

Table 1: Descriptive Findings for Time Spent Using Literacy-Related Materials During Intervention

	Mean (%)	Mean (Min)	Standard Deviation	Range	Mean Duration of Therapy Time (min)
Session 1	20.2%	5.4	31.7	0-98.2%	23.1
Session 3	31.0%	8.2	39.5	0-99.4%	25.1
Average	25.6%	6.8	30.2	0-96.7%	24.1

Literacy Targets

For Session 1, the average time spent targeting literacy was 1.94 minutes (8.12% of total therapy time). Of the 22 videos, 4 targeted literacy skills for 0 minutes (i.e., literacy skills were not targeted at all). The remaining 18 videos ranged in time targeting literacy skills from 0.08

minutes to 5.32 minutes. For Session 3, the average time spent targeting literacy was 1.37 minutes (5.67% of total therapy time). Of the 22 videos, 3 did not target literacy skills at all. The remaining 19 videos ranged in time spent targeting literacy from 0.15 minutes to 6.26 minutes. The average time spent targeting literacy in Sessions 1 and 3 was 1.65 minutes (6.89% of total therapy time). Table 2 reflects the results for literacy targets.

Table 2: Descriptive Findings for Time Spent on Literacy Targets During Intervention

	Mean (%)	Mean (Min)	Standard Deviation	Range	Mean Duration of Therapy Time (min)
Session 1	8.1%	1.9	8.7	0-24.9%	23.1
Session 3	5.7%	1.4	7.8	0-33.2%	25.1
Average	6.9%	1.7	6.8	0-26.0%	24.1

DISCUSSION

The present study aimed to assess SLPs' use of literacy materials and time spent targeting literacy in therapy sessions. It was only recently that the scope of practice of the SLP was expanded to include literacy intervention. To date, there is little research investigating the amount of therapy time that SLPs are in fact devoting to explicit literacy intervention. The present study aimed to explore the percentage of therapy time in which SLPs are using literacy-related materials as well as the percentage of therapy time that SLPs are using to target literacy.

The results indicate that literacy-related materials are being used for a larger percentage of therapy time than the percentage of time being spent explicitly targeting literacy. The average length of therapy was 24.11 minutes long, and SLPs used literacy-related materials for an average of 6.80 minutes (25.59% of total therapy time). While 6.80 minutes seems like a surprisingly small quantity of time, the time spent targeting literacy is even smaller. The data

indicated that SLPs targeted literacy for an average of 1.65 minutes (6.89% of total therapy time). It is important to remember that, for the purposes of this project, literacy-related materials are not directly related to literacy targets. Following the LIOS coding scheme, the literacy-related materials can be used to target other areas of language and, by the same token, literacy can be targeted using other materials. The difference in durations can be attributed to use of literacy materials to target different language targets such as Pragmatics (Narratives), Vocabulary, and the like. It is also important to keep in mind the LIOS definition of a Literacy Target code. Under the LIOS coding scheme, reading a story aloud to children with no additional prompts is not considered explicit literacy instruction and is not, therefore, considered to be a Literacy target. While 1.65 minutes seems like a small quantity of time, it is important to keep in mind the vast breadth of the SLPs scope of practice as evidenced by the numerous target codes in the LIOS coding scheme.

The data also show that of the 44 video sessions, 7 sessions did not have literacy instruction at all. The fact that some therapists didn't even target literacy is surprising. Even more surprising is that of the 44 sessions, 21 sessions did not have use of literacy-related materials at all. This discrepancy between sessions in which literacy-related materials were used and sessions in which literacy was targeted indicates that SLPs are using other materials when targeting literacy. While the absence of literacy targets in some sessions is surprising, the small quantity of time that therapists are spending when they actually target literacy raises the question as to whether quantity or frequency is most effective with literacy intervention. Is literacy intervention more effective when implemented in small quantities each session or is it most effective when therapists dedicate more therapy time to literacy less frequently?

This study selectively chose, from each therapist, the child with the lowest score on a reading skills assessment. The research shows that of the 22 participants, only 3 fell within 'normal' limits of reading ability. The remaining 19 participants' scores ranged from 43 to 80 on a standardized test of reading skill. The contrast between the number of students with significantly poor standard scores in reading-related skills (36% fell below 2 SD of the mean) and the time addressing literacy is surprising. It is also surprising that only one of the 22 children had an IEP specifying literacy-related goals. It is important that future research consider where literacy intervention is being implemented in the schools. While there may be many explanations to account for the contrast between children with LI and the amount of literacy intervention they are receiving in speech therapy, ASHA does indicate that literacy falls under the scope of practice of SLPs.

Limitations and Future Research

While this study provides one of the only assessments of school-based SLPs' therapy activities related to literacy, there are limitations that warrant discussion. First, future research should include a larger sample size, spread over a longer time period. This could ensure that the data more accurately reflects the amount of intervention a child is receiving. This study only examined 22 therapists and only 2 of 5 total sessions. Due to differences among lesson plans for the year, it is important to keep in mind that this data was based on only two sessions submitted by the SLP as 'typical'. Future studies could look at the entire academic year.

Second, there are some videos in which the therapist administered therapy to multiple children, where the target child is among a group. With the LIOS codes, data was only extracted for how often the therapist targets literacy in general but does not distinguish whether the therapist is delivering the therapy to the group or to a particular child. That is to say, when we

say that the SLPs spent an average of 1.65 minutes targeting literacy, there is no indication of whether that literacy was explicitly directed towards the child.

The results of this study raise a number of questions. Primarily, what role do SLPs truly play in literacy intervention? The average time spent targeting literacy within a therapy session as observed in this study was 1.65 minutes. This small amount of time introduces the question as to whether this literacy instruction is planned or merely incidental. In a session that lasts about 25 minutes, is spending 2 minutes on literacy targets even worth the time? Is it effective for lessening and/or eliminating potential reading difficulties? Further research is needed to fully understand where literacy is being targeted for children with language disorders and what the role of the SLP is in addressing literacy-related concerns. As experts in language and articulation intervention, are SLPs adequately trained to implement literacy intervention? As evidenced by the plethora of target codes available in the LIOS coding scheme, SLPs have an enormous breadth of target areas. This introduces the third question, in agreement with the aforementioned article by ASHA: do SLPs have time in their full caseloads to target literacy? Future research could focus on a more comprehensive view of what language areas are being targeted in speech therapy sessions and how literacy fits in with this therapy. Future studies could also focus on the opinions of the clinicians and their impressions of their ability to successfully provide literacy intervention.

Conclusions

There is extensive research and literature on the importance of good reading skills in children. There is a tremendous wealth of knowledge as to why intervention to divert or at least remediate poor reading skills is so critical in the early school-age years. Common knowledge would suggest that the SLP, with their close relationship to children with LI and their specialized

knowledge in intervention for language disorders, would be optimal members of literacy intervention. This view has been supported by ASHA with the official expansion of their scope of practice. Why is this particular study important? What does it tell us? Being one of the first of its kind in a relatively new topic area, this study is most important because it prompts more studies like it and raises clinically applicable questions. Primarily, it shows us that SLPs are not targeting literacy for large amounts of time. It also reveals that literacy-related materials such as books and sentence strips are seldom being used during language therapy.

This study, although small in scale, does warrant some questions. First, what amount of time is sufficient for successful literacy intervention? What is the correct dosage for improving and hopefully assuaging future reading difficulties? Second, in what manner should literacy intervention be implemented (quantity vs. frequency)? When therapy time is a commodity, is it most beneficial to see the child multiple times a week for a short period of time or fewer times per week for longer durations? Third, do SLPs have the time in their caseloads to add yet another therapy task? What roles should SLPs take as members of 'literacy teams'? Regardless, ASHA has mandated that literacy is indeed included in the SLP's scope of practice and it is critical that we thoroughly examine how literacy intervention is being implemented and if these children in danger of reading failure are getting the needed therapy.

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